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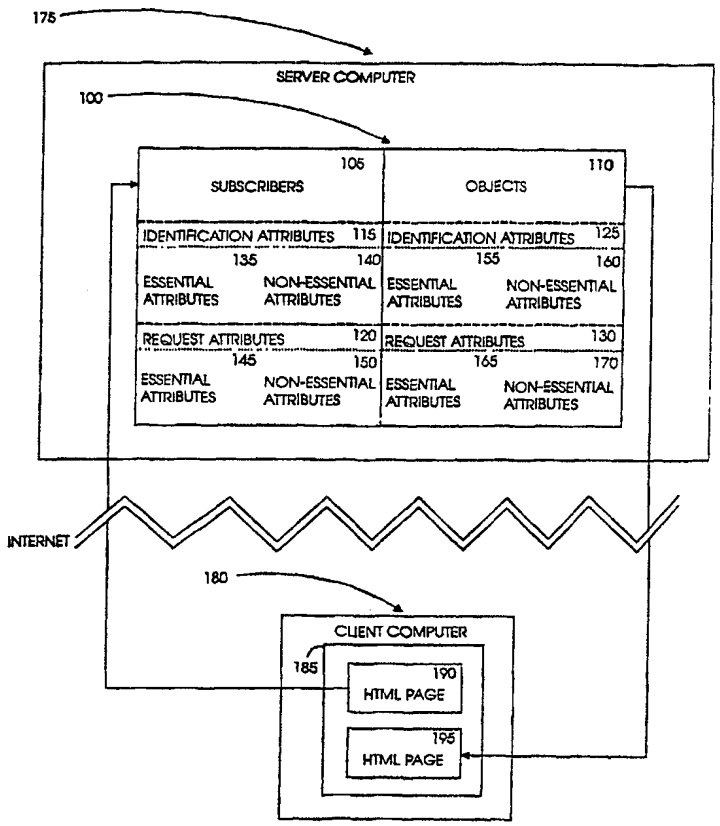
(54) Title: MULTI–LINGUAL ON–LINE OBJECT MATCHING

(57) Abstract

A method and system for on–line interactive object matching (110), including entering subscriber data (105) into a subscriber database by means of a form page, using a first language, the subscriber database storing subscriber data (105), the subscriber data (105) including subscriber identification attributes (115 and 125)) and subscriber request attributes (120 and 130), searching an object database to find data for at least one candidate object (110) within the object database, the object database storing object data, the object including object identification attributes (115 and 125) and object request attributes (120 and 130), and the at least one candidate object being characterized in that its identification attributes (115 and 125) at least partially match corresponding subscriber request attributes (120 and 130), and displaying the at least one candidate object by means of a form page, using a second language.



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Multi-Lingual On-Line Object Matching

FIELD OF THE INVENTION

The present invention relates to matching of objects within databases.

BACKGROUND OF THE INVENTION

The following patents have been found in a U.S. patent search and are believed to be generally relevant to the field of the invention:

US4,566,078; US4,595,980; US4,615,002; US4,658,370; US4,787,035; US4,885,689; US4,905,138; US4,916,610; US5,148,541; US5,157,606; US5,257,185; US5,278,980; US5,307,265; US5,319,745; US5,412,712; US5,416,903; US5,426,583; US5,434,776; US5,442,782; US5,453,761; US5,493,606; US5,504,902; US5,511,199; US5,523,946; US5,557,798; US5,565,908; US5,570,134; US5,583,761; US5,606,700; US5,623,657; US5,634,066; US5,680,628; US5,715,466; US5,721,939; US5,751,957; US5,778,213; US5,778,356; US5,784,069; US5,784,071; US5,787,386; US5,787,410; US5,793,381; US5,794,218; US5,799,308; US5,802,511; US5,805,719; US5,815,710; US5,819,303; US5,826,250; US5,835,912; US5,838,812; US5,848,419; US5,860,010; US5,864,864; US5,867,811; US5,870,605; US5,870,723; US5,873,070; US5,873,084; US5,077,665; US5,197,005; US5,206,949; US5,210,868; US5,251,131; US5,297,039; US5,379,366; US5,404,295; US5,404,507; US5,410,692; US5,428,778; US5,454,106; US5,473,146; US5,535,118; US5,561,793; US5,577,241; US5,600,829; US5,659,731; US5,727,197; US5,778,344; US5,794,231; US5,819,291; US5,822,743; US5,832,474; US5,870,741; WO09717663A1; WO09726614A1; WO09718516A1;

EP00669021A1; EP00762299A1; EP00829053A1; EP00875034A1; EP00388148B1; EP00121071A2; EP00333612A2; EP00376316A2; EP00887748A2; EP00333612A3; EP00376316A3; EP00388148A3;

SUMMARY OF THE INVENTION

The present invention provides methods and systems for multi-lingual on-line match-making, over the Internet. When used in connection with dating services, the present invention can be used to match multi-national subscribers to one another, by

finding candidate matches for each subscriber. When used in connection with employment services, the present invention can be used to match multi-national job openings with people seeking employment.

The present invention enables people of different nationalities to use a common version of a match-making application in their native tongues. The present invention obviates the need to use multiple localized versions of such an application, and integrate multiple databases.

There is thus provided in accordance with a preferred embodiment of the present invention a method for on-line interactive object matching, including entering subscriber data into a subscriber database by means of a form page, using a first language, the subscriber database storing subscriber data, the subscriber data including subscriber identification attributes and subscriber request attributes, searching an object database to find data for at least one candidate object within the object database, the object database storing object data, the object data including object identification attributes and object request attributes, and the at least one candidate object being characterized in that its identification attributes at least partially match corresponding subscriber request attributes, and displaying the at least one candidate object by means of a form page, using a second language.

There is further provided in accordance with a preferred embodiment of the present invention a system for on-line interactive object matching, including a data acquisition unit acquiring subscriber data within a subscriber database by means of a form page, using a first language, the subscriber database storing subscriber data, the subscriber data including subscriber identification attributes and subscriber request attributes, a database search engine searching an object database to find data for at least one candidate object within the object database, the object database storing object data, the object data including object identification attributes and object request attributes, and the at least one candidate object being characterized in that its identification attributes at least partially match corresponding subscriber request attributes, and a display device displaying the at least one candidate object by means of a form page, using a second language.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will be more fully understood and appreciated from the following detailed description, taken in conjunction with the drawings in which:

Figure 1 is a simplified illustration of a language-independent database, used in a preferred embodiment of the present invention;

Figure 2 is a simplified illustration of a database search engine that finds candidate objects for subscribers in accordance with a preferred embodiment of the present invention; and

Figure 3 is a simplified illustration of a multi-lingual on-line object matching system operative in accordance with a preferred embodiment of the present invention.

DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT

The present invention concerns a multi-lingual on-line Internet match-making service. Subscribers to a system operative in accordance with a preferred embodiment of the present invention provide descriptive data to identify themselves, along with data describing objects they are interested in finding. When used as a dating service, the subscribers and objects can both be people interested in meeting other people. When used as an employment service, the subscribers can be employers and the objects can be people seeking employment, or alternatively the subscribers can be people seeking employment and the objects can be job openings.

The multi-lingual capability of the present invention enables the same match-making application to be used internationally. The present invention obviates the need to use multiple localized versions of the application and integrate multiple databases, in order to support multiple languages. Instead, data entering the match-making application in multiple languages is integrated into a common language-independent database. As a result, the present invention enables people from different countries to use a common dating system in their native tongues, and be matched together.

In accordance with a preferred embodiment of the present invention, the subscriber data is stored within a subscriber database, and the object data is stored within an object database. The subscriber database may be the same database as the object database, or alternatively it may be distinct from the object database. The data used to identify a subscriber is preferably a set of subscriber identification attributes, such as the subscriber's age, height, weight, eye color, hair color, academic training, nationality and profession. The data used to describe the objects that a subscriber is interested in finding is preferably a set of subscriber request attributes. The same set of attributes may be used for identification and request attributes, or alternatively different sets of attributes may be used.

Similarly, the data used to identify an object is preferably a set of object identification attributes, and the data used to describe the subscribers that are suitable for an object is preferably a set of object request attributes.

When a subscriber enters his identification attributes and request attributes into the subscriber database, the present invention conducts a search within the object database to find candidate objects that match the subscriber's request.

It will be appreciated by persons skilled in the art that several types of matching criteria can be used in the present invention. A one-way match can be used to find candidate objects within the object database whose identification attributes match corresponding subscriber request attributes. Moreover, the one-way match can be a "complete match," whereby all of the object identification attributes match the corresponding subscriber request attributes, or alternatively the match can be a "partial match," whereby some of the object identification attributes match corresponding subscriber request attributes.

For a more accurate match, the present invention uses a two-may match, to find candidate objects within the object database whose identification attributes match corresponding subscriber request attributes, and whose request attributes match corresponding subscriber identification attributes. Moreover, each direction of the two-way match can be either a complete match or a partial match. For example, a database search can find candidate objects for which their identification attributes completely match the subscriber request attributes, and for which their request attributes partially match the subscriber identification attributes.

The present invention includes the capability of indicating that certain object identification attributes are essential and that other object identification attributes are preferable but non-essential. For example, in a dating service, attributes such as age and weight may be essential and attributes such as nationality and profession may be non-essential. When searching for candidate objects to match a subscriber, a preferred embodiment of the present invention enforces a complete match for essential attributes and a partial match for non-essential attributes, as described hereinbelow with reference to Figure 2.

In one embodiment of the present invention, the classification as to which object identification attributes are essential and which object identification attributes are non-essential is prescribed by an administrator of an object matching system. In an alternative embodiment of the present invention, the classification as to which object identification attributes are essential and which object identification attributes are

non-essential is made by a subscriber. In this latter embodiment the classification as to which object identification attributes are essential and which object identification attributes are non-essential is personal to each subscriber, and can be different for different subscribers. Moreover, a subscriber using the system repeatedly can change his personal classification as to which object identification attributes are essential and which attributes are non-essential to him.

Similarly, subscriber identification attributes can also be classified into essential and non-essential attributes. In the case of a two-way match, where object request attributes are matched with corresponding subscriber identification attributes, a complete match is applied to essential attributes and a partial match is applied to non-essential attributes, as described hereinbelow with reference to Figure 2.

Reference is now made to Figure 1, which is a simplified illustration of a language-independent database, used in a preferred embodiment of the present invention. Shown in Figure 1 is a database 100 that includes subscriber data 105 and object data 110. As mentioned hereinabove, the subscriber and object databases of the present invention may be distinct or identical databases. For purposes of conciseness and clarity, a single database 100 is illustrated in Figure 1. Database 100 stores both subscriber data 105 and object data 110. Subscriber data 105 includes subscriber identification attributes 115 and subscriber request attributes 120. Subscriber identification attributes 115 are used to describe the subscriber himself. Examples of such attributes are the subscriber's age, height, weight, eye color, hair color, academic training, nationality and profession. Subscriber request attributes 120 are used to describe the type of object that the subscriber is interested in being match with.

Similarly, object data 110 includes object identification attributes 125 and object request attributes 130. Identification attributes 125 of an object are used to describe the object being identified. Request attributes 130 of an object are used to describe the type of subscriber that is suitable for matching with the object.

Identification and request attributes are classified into essential and non-essential attributes. As shown in Figure 1, subscriber identification attributes 115 are classified into essential identification attributes 135 and non-essential identification attributes 140, and subscriber request attributes 120 are classified into essential request attributes 145 and non-essential request attributes 150. Similarly, object identification

attributes 125 are classified into essential identification attributes 155 and non-essential identification attributes 160, and object request attributes 130 are classified into essential request attributes 165 and non-essential request attributes 170. For example, age and weight can be essential attributes, whereas nationality and profession can be non-essential attributes.

Preferably, the classification as to which object identification attributes 125 are essential attributes 155 and which ones are non-essential attributes 160 coincides with the classification as to which subscriber request attributes 120 are essential attributes 145 and which ones are non-essential attributes 150. This ensures that essential attributes 155 can be completely matched with essential attributes 145, as described hereinbelow with reference to Figure 2. Similarly, the classification as to which subscriber attributes 115 are essential attributes 135 and which ones are non-essential attributes 140 preferably coincides with the classification as to which object request attributes 130 are essential attributes 165 and which ones are non-essential attributes 170. This ensures that essential attributes 135 can be completely matched with essential attributes 165, as described hereinbelow with reference to Figure 2.

In one embodiment of the present invention, the classification as to which object identification attributes 125 are essential attributes 155 and which ones are non-essential attributes 160 is prescribed by an administrator of the match-making system. In an alternative embodiment of the present invention, the classification as to which object identification attributes 125 are essential attributes 155 and which ones are non-essential attributes 160 is made by a subscriber. In both of these embodiments, the classification among object identification attributes 125 is then imposed as the classification among subscriber request attributes 120, to ensure that the two classifications coincide, as described hereinabove.

Similarly, in one embodiment of the present invention, the classification as to which subscriber identification attributes 115 are essential attributes 135 and which ones are non-essential attributes 140 is prescribed by an administrator of the match-making system. In an alternative embodiment of the present invention, the classification as to which subscriber identification attributes 115 are essential attributes 135 and which ones are non-essential attributes 140 is made by an object. In both of these embodiments, the classification among subscriber identification attributes 115 is

then imposed as the classification among object request attributes 130, to ensure that the two classifications coincide, as described hereinabove.

Database 100 resides on a server computer 175, and is accessed by multiple client computers, such as client computer 180, connected to server computer 175 by Internet connections. Client computer 180 includes a display device 185, and web browser software that renders HTML pages transmitted from server computer 175, such as HTML page 190 and HTML page 195, on display device 185.

Preferably HTML page 190 contains a user interface for inputting subscriber data to database 100, and HTML page 195 contains a layout for displaying to a subscriber candidate object data retrieved from database 100.

Reference is now made to Figure 2, which is a simplified illustration of a database search engine that finds candidate objects for subscribers in accordance with a preferred embodiment of the present invention. A subscriber enters subscriber data 205 into a match-making system of the present invention, in order to seek candidate objects. The objects accessible to the match-making system are objects for which characterizing object data 210 has been entered into the database. Subscriber data 205 includes subscriber identification attributes 215 that serve to identify the subscriber, and subscriber request attributes 220 that serve to describe the objects that the subscriber is interested in finding. Object data 210 includes object identification attributes 225 that serve to identify an object, and object request attributes 230 that serve to identify subscribers that are suitable for an object.

The match-making system then searches through its object database to find candidate objects, appropriate for matching with the subscriber. Various types of searches are possible. For example, a one-way search can be conducted to find candidate objects whose identification attributes completely or partially match the subscriber request attributes. This type of search finds objects that meet the requirements sought by the subscriber. However, the subscriber may not necessarily meet the requirements necessary to be suitable for the candidate objects.

It is also possible to conduct a one-way search in the opposite direction; namely, to find candidate objects whose request attributes completely or partially match the subscriber identification attributes. This type of search finds objects for which the

subscriber is suitable therefor. However, the objects may not necessarily be desirable to the subscriber.

Alternatively, a two-way search can be conducted to find candidate objects whose identification attributes completely or partially match the subscriber request attributes, and whose request attributes completely or partially match the subscriber identification attributes. This type of search finds objects for which the subscriber is suitable therefor, and that also meet the requirements sought by the subscriber.

As mentioned hereinabove, in conducting either a one-way or two-way search, the attributes to be matched may be completely or partially matched. Partial matching finds objects some of whose attributes match the corresponding attributes of the subscriber, but other attributes may not necessarily match. Typically, some of the attributes being matched in the search are of more importance than others.

In a preferred embodiment the present invention classifies attributes into essential and non-essential attributes. As illustrated in Figure 2, subscriber identification attributes 215 are classified into essential identification attributes 235 and non-essential identification attributes 240, and subscriber request attributes 220 are classified into essential request attributes 245 and non-essential request attributes 250. Similarly, object identification attributes 225 are classified into essential identification attributes 255 and non-essential identification attributes 260, and object request attributes are classified into essential request attributes 265 and non-essential request attributes 270.

In a preferred embodiment of the present invention, the request attributes are classified into essential and non-essential attributes, and the same classifications are automatically imposed on the corresponding identification attributes. Specifically, the classification used for the subscriber request attributes 220 is imposed upon the object identification attributes 225, and the classification used for the object request attributes 230 is imposed upon the subscriber identification attributes 215.

The classifications for the subscriber and object request attributes can be prescribed by an administrator of the match-making system. In such a case, where it is known in advance which attributes are essential, the match-making system can ensure that data for all essential subscriber and object identification attributes is entered into the system. If a subscriber omits essential subscriber identification attributes, or if a

user who enters object data omits essential object identification attributes, the system displays a notification indicating the missing essential attribute data, and does not input the subscriber or object data into the database until such missing essential attribute data is supplied.

Alternatively, a subscriber can impose his own personal classification as to which request attributes are essential to him and which attributes are not essential to him. Similarly, a user who enters data for an object into the database can impose his own personal classification as to which request attributes are essential to him and which attributes are not essential to him.

As indicated in Figure 2, in a preferred embodiment using a two-way match, the match-making system searches for objects whose essential identification attributes 255 completely match the corresponding essential subscriber request attributes 245, and whose essential request attributes 265 completely match the corresponding subscriber essential identification attributes 235. Complete matching is indicating by solid arrows in Figure 2.

Partial matching is applied to the non-essential attributes. Specifically, non-essential object identification attributes 260 are partially matched with corresponding non-essential subscriber request attributes 250, and non-essential object request attributes 270 are partially matched with corresponding non-essential subscriber identification attributes 240. Partial matching is indicated by dotted arrows in Figure 2.

In a preferred embodiment, when carrying out a partial match, the present invention provides match rating information, indicating the degree of success of the match. Such a match rating can be the percentage of attributes that match, or an average of weights assigned to each attribute, based on the attributes that match. When candidate objects are presented to a subscriber with match ratings, the subscriber can quickly ascertain which of the candidate objects are better matches than others.

Reference is now made to Figure 3, which is a simplified illustration of a multi-lingual on-line object matching system operative in accordance with a preferred embodiment of the present invention. Subscriber attribute data is input to the system using a first language, and passes through an input filter 310. Input filter 310 converts the subscriber attribute data from the first language into an intermediate language-independent form. For example, input filter 310 may convert the subscriber

attribute data into numerical form. If a user interface for the input data is menu-driven, so that each attribute is selected from a menu of possible choices, then the conversion to numerical format is inherent in the indices of the menus. If the user interface is not menu-driven, but if nevertheless there are only a relatively small number of choices for each attribute (e.g. eye color), then conversion to numerical format is achieved by indexing the choices.

The language-independent subscriber data is input to database 320. A search engine 330 carries out a search to match objects stored in database 320 with the subscriber attribute data. If suitable matches are found, then search engine 330 produces a list of one or more candidate objects. Attribute data for the candidate objects is retrieved in language-independent form, and passed through an output filter 340. Output filter 340 converts the object data from the language-independent form into a second language, for presentation to the subscriber.

The first language may be the same as the second language, or it may be a distinct language. For example, a subscriber may use a French version of Microsoft Windows and input his attribute data in French, and he may use an Italian version of Microsoft Windows and retrieve the candidate objects that are matched with him in Italian. Moreover a different subscriber using a French version of Microsoft Windows may prefer to input his attribute data in English.

As illustrated in Figure 3, input filter 310, database 320, search engine 330 and output filter 340 are part of a match-making system residing on a server computer 350. Multiple client computers 360 are connected to server computer 350 via Internet connections. Client computers 360 are used by subscribers who input subscriber data into the match-making system and retrieve candidate object data. Conversely, client computers 360 may be used by users who input object data into the match-making system. Such users may also retrieve candidate subscriber data.

In addition to identification attributes, the present invention includes the capability of using multi-media data, such as images, audio clips or video clips, to further identify subscribers and objects. When a subscriber uses a match-making system in accordance with a preferred embodiment of the present invention, he is provided with multi-media data corresponding to each candidate object found by matching, in addition to the candidate object's attribute data. In a preferred

embodiment of the present invention, streaming video files, such as a video file in the RealAudio format of Real Networks, Inc., is included with the object data stored within the object database, and the streaming video file associated with a particular object is downloaded to a subscriber for viewing, along with that object's identification attributes, for an object that is a candidate object.

It will be appreciated by persons skilled in the art that the present invention can be combined with a "buddy system," such as the ICQ system of Mirabilis. Within the context of the present invention, such a system can be used to indicate to a subscriber when people who are the candidate objects that match the subscriber, are on-line simultaneous with the subscriber. Upon indication that a particular person is on-line, the subscriber can then initiate a dialogue with such person. Reference information on the ICQ system is available on the Internet at http://www.icq.com.

It will also be appreciated by persons skilled in the art that although the above description relates to a subscriber searching for desirable objects, the present invention can be used by a user searching for subscribers who are suitable for a specific object.

It will be further appreciated by persons skilled in the art that the present invention applies to many types of match-making services. Examples of such services include

- dating services, matching subscribers with one another;
- employment services, matching job openings with people seeking employment;
- travel services, matching people with vacations or tours;
- commercial services, matching people with commercial products; and
- counseling services, matching people with professional counselors.

It will be still further appreciated by persons skilled in the art that the present invention is not limited by what has been particularly shown and described hereinabove. Rather the present invention includes combinations and sub-combinations of the various features described hereinabove as well as modifications and extensions thereof which would occur to a person skilled in the art and which do not fall within the prior art.

CLAIMS

1. A method for on-line interactive object matching, comprising the steps of:

entering subscriber data into a subscriber database by means of a form page, using a first language, the subscriber database storing subscriber data, the subscriber data including subscriber identification attributes and subscriber request attributes;

searching an object database to find data for at least one candidate object within the object database, the object database storing object data, the object data including object identification attributes and object request attributes, and the at least one candidate object being characterized in that its identification attributes at least partially match corresponding subscriber request attributes; and

displaying the at least one candidate object by means of a form page, using a second language.

2. The method of claim 1 wherein the form page is an HTML page.

3. The method of claim 1 wherein the form page is an XML page.

4. The method of claim 1 further comprising the steps of:

converting the subscriber data from the first language into a language-independent format; and

converting the at least one candidate object data from the language-independent format into the second language.

5. The method of claim 4 wherein the language-independent format is a numerical format.

6. The method of claim 1 wherein said searching step finds data for at least one candidate object within the object database, the at least one candidate object being characterized in that its identification attributes completely match corresponding subscriber request attributes.

7. The method of claim 6 wherein said searching step finds data for at least one candidate object within the object database, the at least one candidate object being characterized in that its identification attributes completely match corresponding subscriber request attributes, and its request attributes completely match corresponding subscriber identification attributes.

8. The method of claim 6 wherein said searching step finds data for at least one candidate object within the object database, the at least one candidate object being characterized in that its identification attributes completely match corresponding subscriber request attributes, and its request attributes at least partially match corresponding subscriber identification attributes.

9. The method of claim 8 wherein the object request attributes include essential request attributes and non-essential request attributes, and wherein the subscriber identification attributes include essential identification attributes and non-essential identification attributes, and wherein said searching step finds data for at least one candidate object within the object database, the at least one candidate object being characterized in that its identification attributes completely match corresponding subscriber request attributes, and its essential request attributes completely match corresponding subscriber essential identification attributes.

10. The method of claim 1 wherein the subscriber request attributes include essential request attributes and non-essential request attributes, and wherein the object identification attributes include essential identification attributes and non-essential identification attributes, and wherein said searching step finds data for at least one candidate object within the object database, the at least one candidate object being characterized in that its essential identification attributes completely match corresponding subscriber essential request attributes.

11. The method of claim 1 wherein said searching step finds data for at least one candidate object within the object database, the at least one candidate object being characterized in that its identification attributes at least partially match corresponding

subscriber request attributes, and its request attributes completely match corresponding subscriber identification attributes.

12. The method of claim 11 wherein the subscriber request attributes include essential request attributes and non-essential request attributes, and wherein the object identification attributes include essential identification attributes and non-essential identification attributes, and wherein said searching step finds data for at least one candidate object within the object database, the at least one candidate object being characterized in that its essential identification attributes completely match corresponding subscriber essential request attributes, and its request attributes completely match corresponding subscriber identification attributes.

13. The method of claim 1 wherein said searching step finds data for at least one candidate object within the object database, the at least one candidate object being characterized in that its identification attributes at least partially match corresponding subscriber request attributes, and its request attributes at least partially match corresponding subscriber identification attributes.

14. The method of claim 13 wherein the subscriber request attributes include essential request attributes and non-essential request attributes, and wherein the object identification attributes include essential identification attributes and non-essential identification attributes, and wherein said searching step finds data for at least one candidate object within the object database, the at least one candidate object being characterized in that its essential identification attributes completely match corresponding subscriber essential request attributes, and its request attributes at least partially match corresponding subscriber identification attributes.

15. The method of claim 13 wherein the object request attributes include essential request attributes and non-essential request attributes, and wherein the subscriber identification attributes include essential identification attributes and non-essential identification attributes, and wherein said searching step finds data for at least one candidate object within the object database, the at least one candidate object being

characterized in that its identification attributes at least partially match corresponding subscriber request attributes, and its essential request attributes completely match corresponding subscriber essential identification attributes.

16. The method of claim 13 wherein the subscriber request attributes include essential request attributes and non-essential request attributes, and wherein the subscriber identification attributes include essential identification attributes and non-essential identification attributes, and wherein the object request attributes includes essential request attributes and non-essential request attributes, and wherein the object identification attributes include essential identification attributes and non-essential identification attributes, and wherein said searching step finds data for at least one candidate object within the object database, the at least one candidate object being characterized in that its essential identification attributes completely match corresponding subscriber essential request attributes, and its essential request attributes completely match corresponding subscriber essential identification attributes.

17. The method of claim 1 further comprising calculating a rating indicating the degree to which the at least one candidate object identification attributes at least partially match corresponding subscriber request attributes.

18. The method of claim 1 wherein the object data within the database includes audio data, and said displaying step further comprises playing the audio data for the at least one candidate object in a speaker.

19. The method of claim 1 wherein the object data within the database includes image data, and said displaying step further comprises rendering the image data for the at least one candidate object on a video monitor.

20. The method of claim 1 wherein the object data within the database includes video data, and said displaying step further comprises streaming the video data for the at least one candidate object on a video monitor.

21. The method of claim 1 wherein the second language is the same as the first language.

22. The method of claim 1 wherein the second language is different than the first language.

23. The method of claim 1 wherein the object database is the same database as the subscriber database.

24. The method of claim 1 wherein the object database is distinct from the subscriber database.

25. The method of claim 1 further comprising the step of indicating which objects from among the at least one candidate object are currently on-line.

26. A system for on-line interactive object matching, comprising:

a data acquisition unit acquiring subscriber data within a subscriber database by means of a form page, using a first language, the subscriber database storing subscriber data, the subscriber data including subscriber identification attributes and subscriber request attributes;

a database search engine searching an object database to find data for at least one candidate object within the object database, the object database storing object data, the object data including object identification attributes and object request attributes, and the at least one candidate object being characterized in that its identification attributes at least partially match corresponding subscriber request attributes; and

a display device displaying the at least one candidate object by means of a form page, using a second language.

27. The system of claim 26 wherein the form page is an HTML page.

28. The system of claim 26 wherein the form page is an XML page.

29. The system of claim 26 further comprising:

an input filter converting the subscriber data from the first language into a language-independent format; and

an output filter converting the at least one candidate object data from the language-independent format into the second language.

30. The system of claim 29 wherein the language-independent format is a numerical format.

31. The system of claim 26 wherein said database search engine finds data for at least one candidate object within the object database, the at least one candidate object being characterized in that its identification attributes completely match corresponding subscriber request attributes.

32. The system of claim 31 wherein said database search engine finds data for at least one candidate object within the object database, the at least one candidate object being characterized in that its identification attributes completely match corresponding subscriber request attributes, and its request attributes completely match corresponding subscriber identification attributes.

33. The system of claim 31wherein said database search engine finds data for at least one candidate object within the object database, the at least one candidate object being characterized in that its identification attributes completely match corresponding subscriber request attributes, and its request attributes at least partially match corresponding subscriber identification attributes.

34. The system of claim 33 wherein the object request attributes include essential request attributes and non-essential request attributes, and wherein the subscriber identification attributes include essential identification attributes and non-essential identification attributes, and wherein said database search engine finds data for at least one candidate object within the object database, the at least one candidate object being characterized in that its identification attributes completely match corresponding

subscriber request attributes, and its essential request attributes completely match corresponding subscriber essential identification attributes.

35. The system of claim 26 wherein the subscriber request attributes include essential request attributes and non-essential request attributes, and wherein the object identification attributes include essential identification attributes and non-essential identification attributes, and wherein said database search engine finds data for at least one candidate object within the object database, the at least one candidate object being characterized in that its essential identification attributes completely match corresponding subscriber essential request attributes.

36. The system of claim 26 wherein said database search engine finds data for at least one candidate object within the object database, the at least one candidate object being characterized in that its identification attributes at least partially match corresponding subscriber request attributes, and its request attributes completely match corresponding subscriber identification attributes.

37. The system of claim 36 wherein the subscriber request attributes include essential request attributes and non-essential request attributes, and wherein the object identification attributes include essential identification attributes and non-essential identification attributes, and wherein said database search engine finds data for at least one candidate object within the object database, the at least one candidate object being characterized in that its essential identification attributes completely match corresponding subscriber essential request attributes, and its request attributes completely match corresponding subscriber identification attributes.

38. The system of claim 26 wherein said database search engine finds data for at least one candidate object within the object database, the at least one candidate object being characterized in that its identification attributes at least partially match corresponding subscriber request attributes, and its request attributes at least partially match corresponding subscriber identification attributes.

39. The system of claim 38 wherein the subscriber request attributes include essential request attributes and non-essential request attributes, and wherein the object identification attributes include essential identification attributes and non-essential identification attributes, and wherein said database search engine finds data for at least one candidate object within the object database, the at least one candidate object being characterized in that its essential identification attributes completely match corresponding subscriber essential request attributes, and its request attributes at least partially match corresponding subscriber identification attributes.

40. The system of claim 38 wherein the object request attributes include essential request attributes and non-essential request attributes, and wherein the subscriber identification attributes include essential identification attributes and non-essential identification attributes, and wherein said database search engine finds data for at least one candidate object within the object database, the at least one candidate object being characterized in that its identification attributes at least partially match corresponding subscriber request attributes, and its essential request attributes completely match corresponding subscriber essential identification attributes.

41. The system of claim 38 wherein the subscriber request attributes include essential request attributes and non-essential request attributes, and wherein the subscriber identification attributes include essential identification attributes and non-essential identification attributes, and wherein the object request attributes includes essential request attributes and non-essential request attributes, and wherein the object identification attributes include essential identification attributes and non-essential identification attributes, and wherein said database search engine finds data for at least one candidate object within the object database, the at least one candidate object being characterized in that its essential identification attributes completely match corresponding subscriber essential request attributes, and its essential request attributes completely match corresponding subscriber essential identification attributes.

42. The system of claim 26 further comprising a processor calculating a rating indicating the degree to which the at least one candidate object identification attributes at least partially match corresponding subscriber request attributes.

43. The system of claim 26 wherein the object data within the database includes audio data, and wherein the system further comprises an audio player playing the audio data for the at least one candidate object.

44. The system of claim 26 wherein the object data within the database includes image data, and said display device displays the image data for the at least one candidate object.

45. The system of claim 26 wherein the object data within the database includes video data, and said display device displays the video data for the at least one candidate object.

46. The system of claim 26 wherein the second language is the same as the first language.

47. The system of claim 26 wherein the second language is different than the first language.

48. The system of claim 26 wherein the object database is the same database as the subscriber database.

49. The system of claim 26 wherein the object database is distinct from the subscriber database.

50. The system of claim 26 further comprising a subscriber identification unit indicating which objects from among the at least one candidate object are currently on-line.

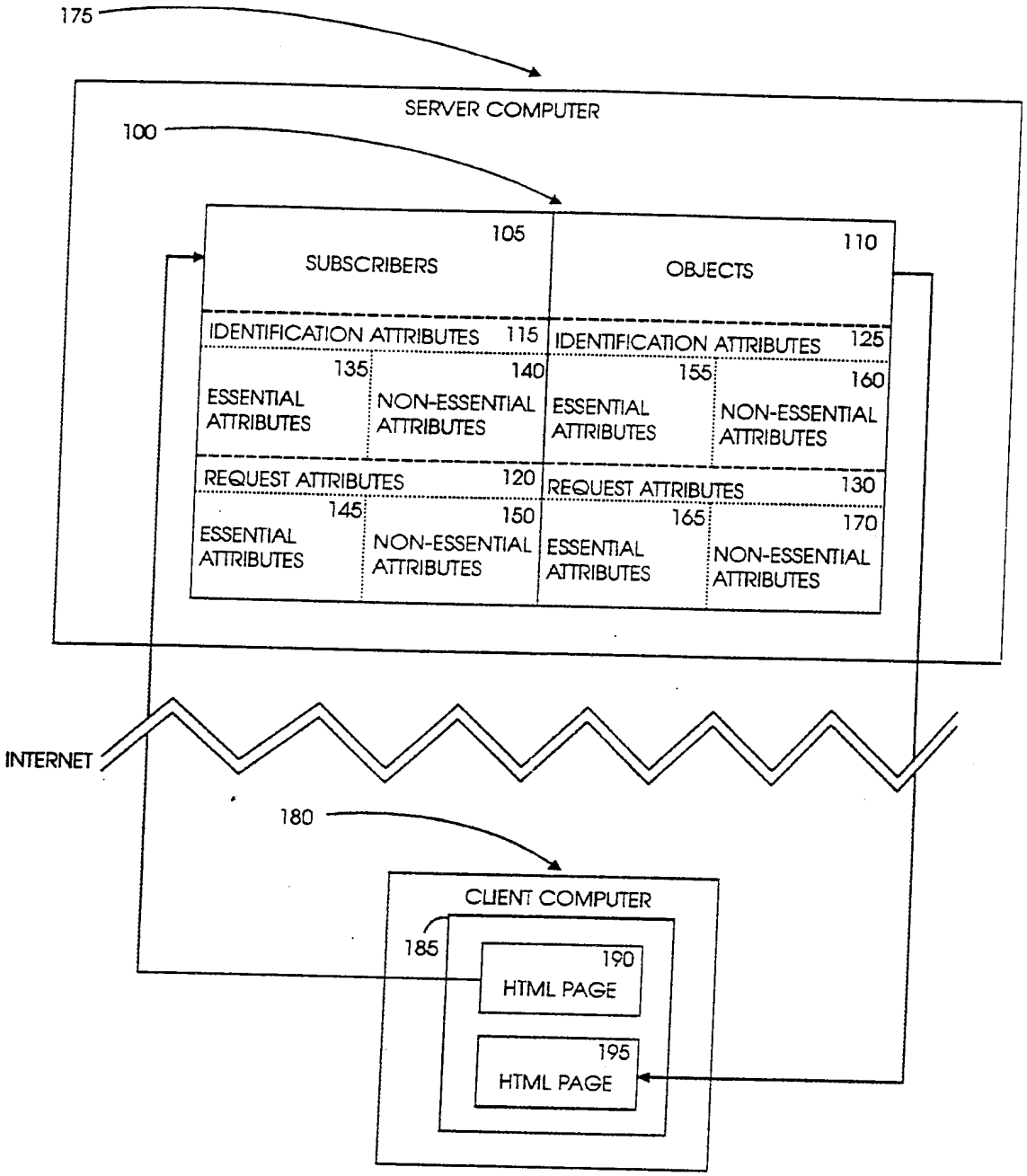
175
SERVER COMPUTER
100
105
SUBSCRIBERS
110
OBJECTS
IDENTIFICATION ATTRIBUTES 115
IDENTIFICATION ATTRIBUTES 125
135
ESSENTIAL ATTRIBUTES
140
NON-ESSENTIAL ATTRIBUTES
155
ESSENTIAL ATTRIBUTES
160
NON-ESSENTIAL ATTRIBUTES
REQUEST ATTRIBUTES 120
REQUEST ATTRIBUTES 130
145
ESSENTIAL ATTRIBUTES
150
NON-ESSENTIAL ATTRIBUTES
165
ESSENTIAL ATTRIBUTES
170
NON-ESSENTIAL ATTRIBUTES
INTERNET
180
CLIENT COMPUTER
185
190
HTML PAGE
195
HTML PAGE

FIGURE 1

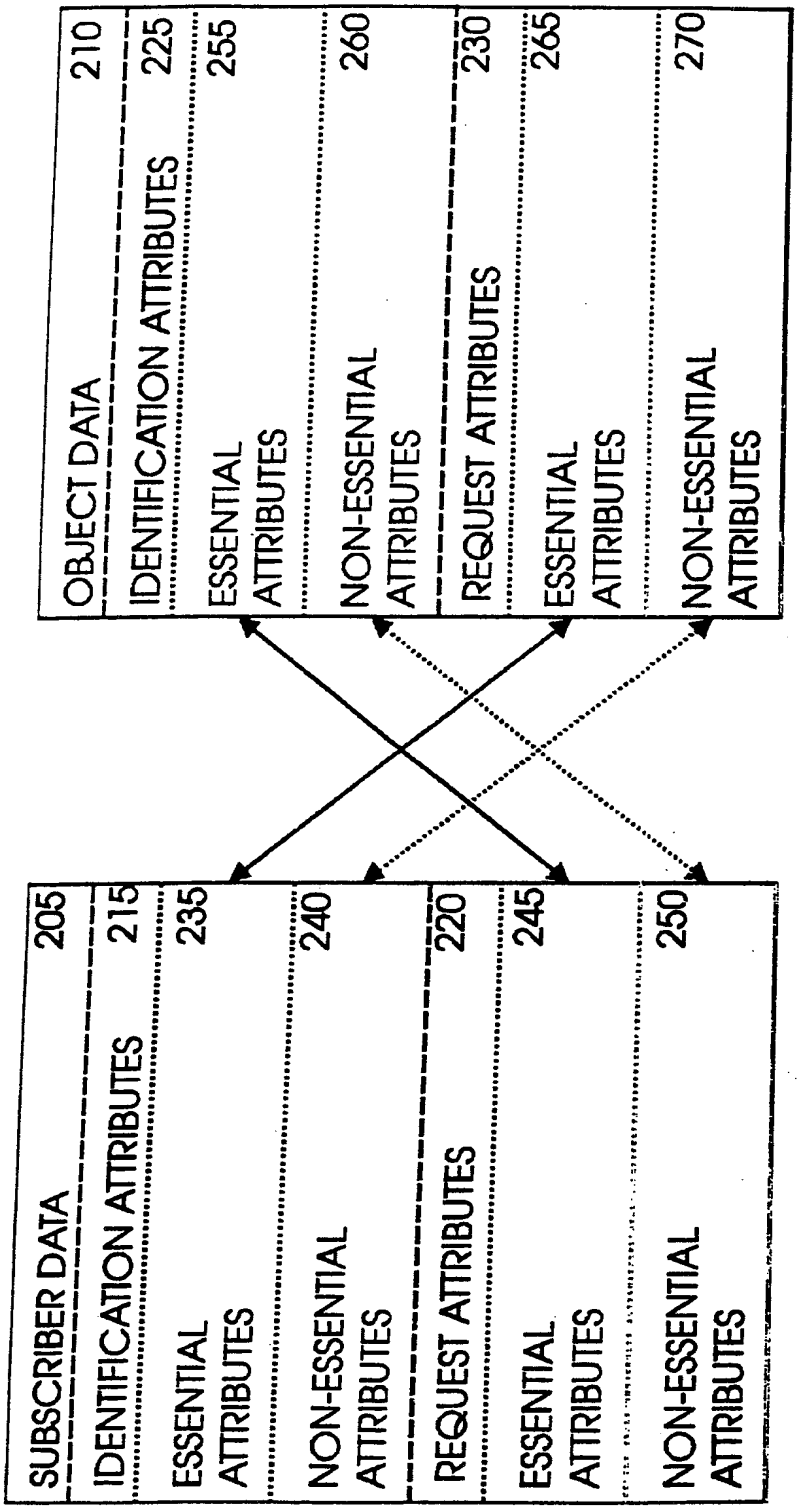
SUBSCRIBER DATA 205
IDENTIFICATION ATTRIBUTES 215
ESSENTIAL ATTRIBUTES 235
NON-ESSENTIAL ATTRIBUTES 240
REQUEST ATTRIBUTES 220
ESSENTIAL ATTRIBUTES 245
NON-ESSENTIAL ATTRIBUTES 250
OBJECT DATA 210
IDENTIFICATION ATTRIBUTES 225
ESSENTIAL ATTRIBUTES 255
NON-ESSENTIAL ATTRIBUTES 260
REQUEST ATTRIBUTES 230
ESSENTIAL ATTRIBUTES 265
NON-ESSENTIAL ATTRIBUTES 270

FIGURE 2

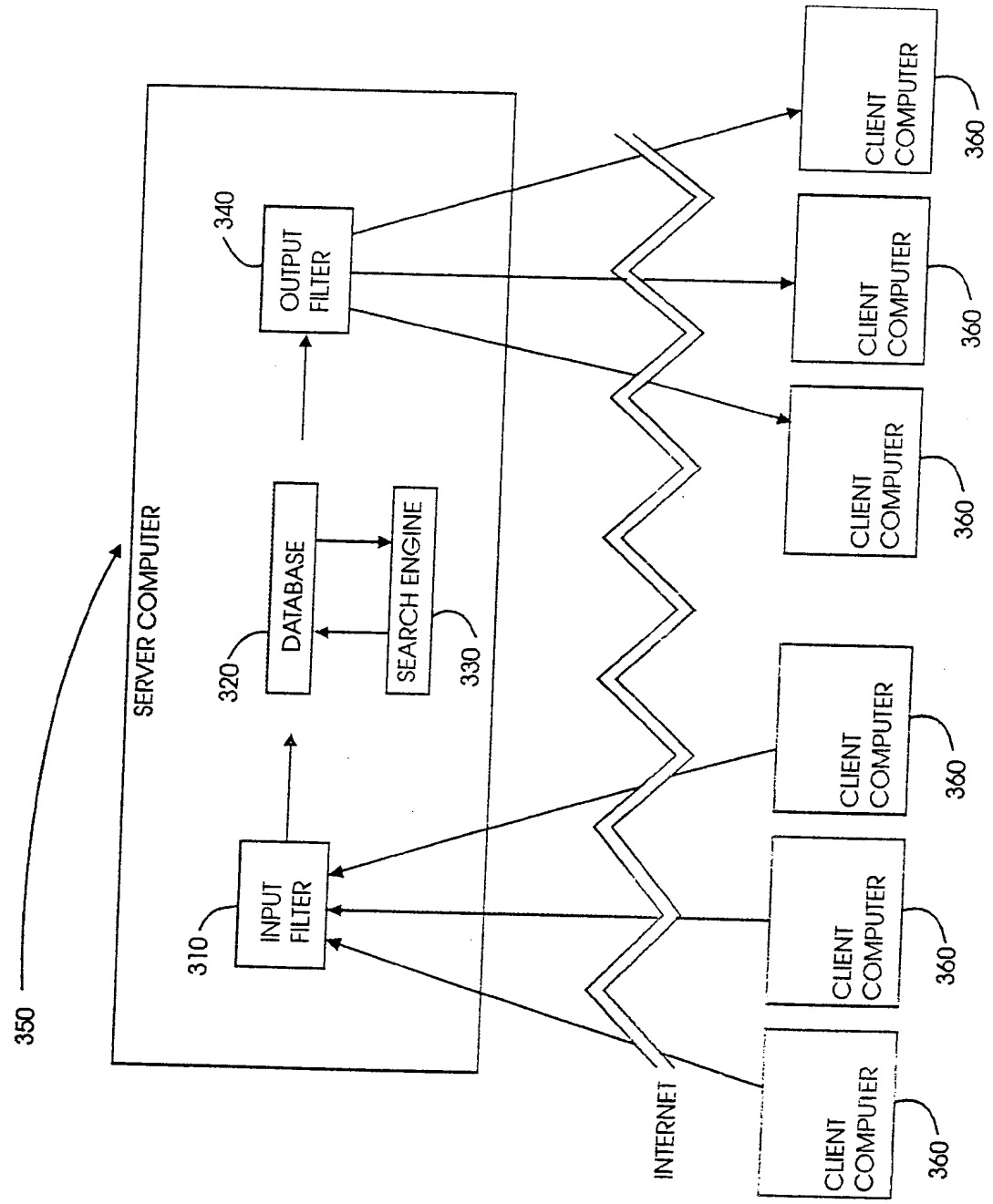
350
SERVER COMPUTER
INPUT FILTER
310
DATABASE
320
SEARCH ENGINE
330
OUTPUT FILTER
340
INTERNET
CLIENT COMPUTER
360
CLIENT COMPUTER
360
CLIENT COMPUTER
360
CLIENT COMPUTER
360
CLIENT COMPUTER
360
CLIENT COMPUTER
360

FIGURE 3

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IL00/00186

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : G06F 17/30
US CL : 707/2, 3, 103, 104; 705/1, 8, 9
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 707/2, 3, 103, 104; 705/1, 8, 9

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

Please See Extra Sheet.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,442,782 A (MALATESTA et al) 15 August 1995, col, 1, lines 56-68, col. 2, lines 1-11, 14-32, and 63-68, col. 3, lines 1-19 and lines 34-68, col. 4, lines 1-68, col. 5, lines 1-43 and lines 50-68, col. 6, lines 1-68, col. 7, lines 1-10, col. 8, lines 9-68, col. 9, lines 1-32, col. 10, lines 54-68, col. 11, lines 1-18.	1-50
Y	US 5,758,324 A (HARTMAN et al) 26 May 1998, col. 1, lines 52-67, col. 2, lines 1-14 and lines 39-45, col. 3, lines 1-6 and lines 46-57, col. 5, lines 34-67, col. 6, lines 1-7 and lines 48-67, col. 7, lines 1-5 and lines 52-67, col. 8, lines 1-51, col. 9, lines 33-67, col. 12, lines 13-29, col. 13, lines 41-50, and col. 14, lines 5-36 and lines 57-64.	1-50

[X] Further documents are listed in the continuation of Box C. [ ] See patent family annex.

*	Special categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A"	document defining the general state of the art which is not considered to be of particular relevance	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E"	earlier document published on or after the international filing date	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&"	document member of the same patent family
"O"	document referring to an oral disclosure, use, exhibition or other means		
"P"	document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search 18 JUNE 2000	Date of mailing of the international search report 13 JUL 2000
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703) 305-3230	Authorized officer KIM VU FOR Telephone No. (703) 305-4393

Form PCT/ISA/210 (second sheet) (July 1998) ★

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IL00/00186

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,778,356 A (HEINY) 07 July 1998, col. 2, lines 7-47, col. 6, lines 65-67, col. 7, lines 1-6, col. 8, lines 53-67, col. 9, lines 1-45, col. 11, lines 37-67, col. 12, lines 1-3 and lines 15-46, col. 15, lines 37-67, col. 16, lines 1-47, col. 18, lines 19-48, col. 20, lines 24-67, col. 21, lines 1-14, col. 25, lines 30-58, col. 26, lines 60-67, col. 27, lines 1-15, col. 28, lines 11-65, col. 29, lines 61-67, col. 31, lines 33-41, and col. 32, lines 2-25.	1-50

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IL00/00186

B. FIELDS SEARCHED
Electronic data bases consulted (Name of data base and where practicable terms used):

WEST

Search terms: on-line dating service, employment service, object oriented database, HTML, XML, searching, languages, numerical format, matching